101807836

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	79126	(serpentine or sinous or undulat$4 or coil$4 or helix$3 or spiral$4 or curv$4) near3 (wire or wiring or line or trac$4 or lead)	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 15:55
L3	245950	(integrated adj circuit) or MEMS or micromechanic$4 or microelectromechanic$4 or microoptic$4 or micro-mechanic$4 or micro-electromechanic$4 or micro-optic$4	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:00
L4	174569	(pressure or piezo$4 or strain$4 or stress$4 or vacuum) near3 (sens$4 or detect$4 or gaug$4 or prob$4 or instrument)	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:02
L5	4	1 and 3 and 4	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:04
L6	350	1 and 4	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:03
L7	459036	ic or (integrated adj circuit)	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:03
L8	7	6 and 7	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:03
L9	0	6 and MEMS	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:04
L10	7696	mems	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:04
L11	0	6 and 10	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:04
L12	3	8 not 5	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:06
L13	18	serpentine adj wire	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:08
L14	1168	helical adj2 wire	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:09
L15	8	14 and 4	EPO; JPO; DERWENT ; IBM_TDB	OR	ON	2006/05/04 16:09

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5/4/2006 1:08:16 PM

[File 2] INSPEC 1898-2006/Jan W2
[File 6] NTIS 1964-2006/Jan W4
[File 8] Ei Compendex(R) 1970-2006/Jan W4
[File 34] SciSearch(R) Cited Ref Sci 1990-2006/Jan W4
[File 434] SciSearch(R) Cited Ref Sci 1974-1989/Dec
[File 35] Dissertation Abs Online 1861-2006/Jan
[File 65] Inside Conferences 1993-2006/Jan W5
[File 94] JICST-EPlus 1985-2006/Nov W3
[File 144] Pascal 1973-2006/Jan W2
[File 23] CSA Technology Research Database 1963-2006/Jan
[File 103] Energy SciTec 1974-2006/Jan B1
[File 31] World Surface Coatings Abs 1976-2006/Jan
[File 95] TEME-Technology & Management 1989-2006/Jan W5
[File 56] Computer and Information Systems Abstracts 1966-2006/Apr
[File 57] Electronics & Communications Abstracts 1966-2006/Apr
[File 68] Solid State & Superconductivity Abstracts 1966-2006/Jan
[File 60] ANTE: Abstracts in New Tech & Engineer 1966-2006/Jan
[File 293] Engineered Materials Abstracts 1966-2006/Jan
[File 239] Mathsci 1940-2005/Feb
[File 256] TECINFOSOURCE 82-2005/DEC

Set	Items	Description
S1	193572	S MICROFABRICAT?????? OR MICRO()FABRICAT?????? OR (MICROELECTRONIC? ? OR MICRO()ELECTRONIC OR SEMICONDUCTOR? ? OR SEMI()CONDUCTOR? ? OR MEMS)(3N)FABRICAT??????? OR MICROMACHIN?????? OR MICRO()MACHIN?????? OR (SEMICONDUCTOR OR SEMI()CONDUCTOR)(3N)PROCESS???????
S2	648639	S (VACUUM OR PRESSURE OR PIEZO??????????? OR STRAIN????? OR STRESS?????? OR FORCE? ?)(3N)(SENS???? OR DETECT??????? OR GAUGE? ? OR INSTRUMENT????? OR TEST????? OR PROB????)
S3	2832716	S ENCLOS????? OR HOUS??????? OR ENCAS???????? OR COVER?????? OR ENCAPSULAT????? OR MOUNT?????
S4	5192996	S SEMICONDUCTOR? ? OR SEMI()CONDUCTOR? ? OR PCB? ? OR TAB? ? OR PRINT????()CIRCUIT()BOARD? ? OR CIRCUIT???()BOARD? ? OR LOAD()BOARD? ? OR LOADBOARD? ? OR LSI? ? OR ASIC? ? OR ELECTRON???()DEVICE? ? OR PRINT???()CIRCUIT??? OR IC? ? OR INTEGRAT????()CIRCUIT??? OR CHIP? ? OR WAFER??? OR MICROCHIP? ? OR MICRO()CHIP? ? OR VLSI? ? OR FLEX?????(3N)CIRCUIT OR FLEX?????? OR (LEAD? ? OR WIRE? ? OR WIRING OR LINE? ? OR TRAC????? OR INTEGRAT?????)(3N)FLEX?????? OR MEMS OR MICROELECTROMECHANIC???? OR MICRO()ELECTROMECHANIC???? OR MICROMECHANIC????? OR MICRO()MECHANIC???? OR MICRO()OPTICAL
S5	3542017	S SERPENTINE OR SINOUS OR WIND???? OR SNAK??? OR UNDULAT???? OR COIL???? OR HELIX??? OR SPIRAL OR CURV??????
S6	33	S S1 AND S2 AND S3 AND S4 AND S5
S7	21	RD (unique items)
S8	20	S S7 AND PY<=2004
S9	7572	S S1 AND S4 AND S5
S10	1	S S8 AND (SUSPEND????? OR HANG?????? OR DROP?????)
S11	182	S S9 AND (SEPARATE(2N)DIE OR DIE OR DICE)
S12	13	S S11 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S13	11	RD (unique items)
S14	11	S S13 AND PY<=2004
S15	0	S S8 AND (SEPARATE(2N)DIE OR DIE OR DICE)
S16	1	S S8 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S17	5596	S S2 AND S4 AND S5
S18	173	S S17 AND (SUSPEND????? OR HANG?????? OR DROP?????)
S25	27	S S23 AND (WIRE OR WIRING OR LINE? ? OR TRAC?????)
S26	4	S S8 AND (WIRE OR WIRING OR LINE? ? OR TRAC?????)
S27	4	RD (unique items)
S28	1	S S16 NOT S10
S29	1	S S19 NOT (S10 OR S16)
S30	3	S S27 NOT (S10 OR S16 OR S19)
S31	11	S S14 NOT (S10 OR S16 OR S19 OR S27)
S32	433	S (SERPENTINE OR HELIX OR SINOUS)(2N)(WIRE OR WIRING)
S33	4	S S32 AND S1
S34	2	RD (unique items)

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S35	4	S S32 AND S2
S36	4	RD (unique items)
S37	62	S S32 AND S4
S38	35	RD (unique items)
S39	32	S S38 AND PY<=2004
S40	2	S S34 NOT (S10 OR S14 OR S16 OR S19 OR S27)
S41	4	S S36 NOT (S10 OR S14 OR S16 OR S19 OR S27 OR S34)
S42	15	S S8 NOT (S10 OR S14 OR S16 OR S19 OR S27 OR S34)

10/9/1 (Item 1 from file: 2) **Links**
INSPEC

06953334 **INSPEC Abstract Number:** A9815-4780-012, B9808-7230-026
Title: A silicon wafer-bonding technology for microfabricated shear- stress sensors with backside contacts
Author Goldberg, H.D.; Breuer, K.S.; Schmidt, M.A.
Author Affiliation: Dept. of Electr. Eng. & Comput. Sci., MIT, Cambridge, MA, USA
Conference Title: Technical Digest. Solid-State Sensor and Actuator Workshop p. 111-15
Publisher: Transducer Res. Found , Cleveland Heights, OH, USA
Publication Date: 1994 **Country of Publication:** USA xvi+267 pp.
ISBN: 0 9640024 0 X **Material Identity Number:** XX98-01059
U.S. Copyright Clearance Center Code: 0 9640024 0 X/94/$3.00
Conference Title: Technical Digest Solid-State Sensor and Actuator Workshop
Conference Sponsor: Transducers Res. Found
Conference Date: 13-16 June 1994 **Conference Location:** Hilton Head Island, SC, USA
Availability: Wen H Ko, President, Transducer Research Foundation Inc, c/o 1356 Forest Hills Boulevard, Cleveland Heights, OH 44118, USA

Language: English **Document Type:** Conference Paper (PA)
Treatment: Practical (P); Experimental (X)
Abstract: Measurement of shear stress is of great importance for polymer extrusion process control, and for turbulent boundary layer modeling and control for **wind** tunnel research. This paper describes wall-**mounted** sensors for both the direct and indirect measurement of shear **stress** . Floating-element **sensors** (L=140-500 mu m, W=120-500 mu m, and T=5 mu m) and hot-wire anemometers (L=65-650 mu m, W=5 mu m, T=5 mu m) were successfully **microfabricated** using silicon **wafer** bonding and etch-back technology. A new fabrication scheme has been developed to allow contact of the devices from the back side of the **chip** by implementing through-**wafer** vias. This was done to facilitate the packaging of these wall-**mounted** devices. (21 Refs)
Subfile: A B
Descriptors: anemometers; etching; flowmeters; **micromachining**; microsensors; **semiconductor** device packaging; shear turbulence; silicon; stress measurement; **wafer** bonding
Identifiers: **wafer**-bonding technology; **microfabricated** shear-**stress sensors**; backside contacts; shear stress measurement; polymer extrusion process control; turbulent boundary layer modeling; **wind** tunnel research; wall-**mounted** sensors; direct measurement; indirect measurement; floating-element sensors; hot-wire anemometers; etch-back technology; through-**wafer** vias; packaging; piezoresistive readout; turbulence measurement; **suspended** microstructure; anisotropic etching; 140 to 500 micron; 120 to 500 micron; 5 micron; 65 to 650 micron; Si
Class Codes: A4780 (Instrumentation for fluid dynamics); A8160C (Surface treatment and degradation of semiconductors); A0630M (Measurement of mechanical variables); A0670D (Sensing and detecting devices); B7230 (Sensing devices and transducers); B7320W (Level, flow and volume measurement); B2575 (Micromechanical device technology); B2550E (Surface treatment for semiconductor devices); B7320G (Mechanical variables measurement)
Chemical Indexing:
Si sur - Si el (Elements - 1)
Si int - Si el (Elements - 1)
Numerical Indexing: size 1.4E-04 to 5.0E-04 m; size 1.2E-04 to 5.0E-04 m; size 5.0E-06 m; size 6.5E-05 to 6.5E-04 m

40/9/2 (Item 2 from file: 2) **Links**

Fulltext available through: USPTO Full Text Retrieval Options

INSPEC

05019602 **INSPEC Abstract Number:** A91144362, B91075678

Title: Making quantum wires and boxes for optoelectronic devices

Author Merz, J.L.; Petroff, P.M.
Author Affiliation: Center for Quantized Electron. Structures, California Univ., Santa Barbara, CA, USA

Journal: Materials Science & Engineering B (Solid-State Materials for Advanced Technology) vol.B9, no.1-3 p. 275-84

Publication Date: 15 July 1991 **Country of Publication:** Switzerland
ISSN: 0921-5107
U.S. Copyright Clearance Center Code: 0921-5107/91/$3.50
Conference Title: European Materials Research Society 1990 Fall Meeting
Conference Date: 27-30 Nov. 1990 **Conference Location:** Strasbourg, France

Language: English **Document Type:** Conference Paper (PA); Journal Paper (JP)
Treatment: Theoretical (T)

Abstract: The authors review current techniques used to fabricate low dimensional quantum structures for optoelectronic applications. Work has included the fabrication of quantum wire structures using molecular beam epitaxy (MBE) growth of tilted superlattices on vicinal substrates, observation and modeling of self-ordering effects that occur during this process, extension to antimony-containing III-V compounds, and quantum **wire** formation in '**serpentine** superlattices'. In addition, the authors discuss results obtained using focused ion beam implantation techniques to 'write' quantum wires and boxes. Direct growth by both MBE and metal-organic chemical vapor deposition (MOCVD) on lithographically patterned substrates, presently underway at Bellcore, are also described, along with the electron-beam patterning and MOCVD regrowth of phosphide-based quantum wire and box configurations carried out at the Tokyo Institute of Technology. Application of these various **fabrication** techniques to **semiconductor** lasers and high-speed photodetectors are discussed. (36 Refs)

Subfile: A B

Descriptors: ion implantation; molecular beam epitaxial growth; reviews; semiconductor growth; semiconductor quantum dots; semiconductor quantum wires

Identifiers: reviews; self-ordering modelling; III-V semiconductors; semiconductor quantum boxes; optoelectronic devices; low dimensional quantum structures; quantum wire structures; molecular beam epitaxy; tilted superlattices; focused ion beam implantation; MOCVD; lithographically patterned substrates ; electron-beam patterning; semiconductor lasers; high-speed photodetectors

Class Codes: A8115G (Vacuum deposition); A6170T (Doping and implantation of impurities); A0130R (Reviews and tutorial papers; resource letters); B0510D (Epitaxial growth); B2550B (Semiconductor doping)

42/9/9 (Item 1 from file: 94) Links
Fulltext available through: USPTO Full Text Retrieval Options
JICST-EPlus

05696929 **JICST Accession Number:** 04A0121565 **File Segment:** JICST-E
Optimal Thermal Design of Micro Hot-film Wall Shear Stress Sensor.
YOSHINO TAKASHI (1); SUZUKI YUJI (1); KASAGI NOBUHIDE (1) ; KAMIUNTEN SHOJI (2)
(1) Univ. Tokyo, Graduate School of Engineering, JPN ; (2) Yamatake Corp., JPN
Nippon Kikai Gakkai Ronbunshu. B (Transactions of the Japan Society of Mechanical Engineers. B) , **2004** , VOL.70,NO.689 , PAGE.38-45 , FIG.17, TBL.1, REF.19
Journal Number: F0036BAN **ISSN:** 0387-5016
Universal Decimal Classification: 532.08+532.5
Language: Japanese **Country of Publication:** Japan
Document Type: Journal
Article Type: Original paper
Media Type: Printed Publication
Abstract: A series of numerical analyses of the unsteady conjugate heat transfer around a micro hot-film sensor are made in order to improve its response in the wall shear stress measurement. It is found that the frequency response of an ideal sensor is limited even in the absence of the heat conduction loss to the substrate. Heat conduction in the fluid in the upstream direction and by-pass convective heat transfer from the diaphragm are two major mechanisms of deteriorating the sensor response. Fabrication of a pair of slits adjacent to the hot-film results in considerable reduction of the tangential heat conduction in the diaphragm. A new shear **stress sensor** is designed based on the present numerical simulation and fabricated with the aid of the **microelectromechanical** systems (**MEMS**) technology. Through the performance test in a fully-developed turbulent channel flow, it is demonstrated that the frequency response of the sensor is much improved compared with that of the our previous sensor. (author abst.)
Descriptors: micromachine; sensor; shearing stress; optimum design; heat characteristic; trial manufacture; heat transfer; thermal analysis; dynamic characteristic; performance evaluation; surface of wall; insulation structure; **wind** tunnel test; two dimension; numerical analysis; **micromachining**; diaphragm(machine element); mechatronics; etching; platinum; turbulent flow; thin film; ceramic coating
Identifiers: hot film sensor; deposition of thin film
Broader Descriptors: machinery; instrumentation element; stress(mechanics); design; characteristic; action and behavior; heat transmission; analysis(separation); analysis; evaluation; face; structure; test; dimension; numerical calculation; calculation; fine patterning; working and processing; machine element; technology; surface treatment; treatment; platinum group metal; transition metal; metallic element; element; disturbance; turbulence; fluid flow; membrane and film; **covering**
Classification Codes: BC01020K

42/9/11 (Item 1 from file: 23) **Links**

0005564812 IP Accession No: N99-13679
Interface Properties of MEMS Sensors on Airfoil

Selim, Raouf Christopher Newport Univ., Dept. of Physics, Computer Science and Engineering, Newport News, VA United States [Selim]
Publication Date: 1998

Conference:
NASA no. 19990019723. 1998 NASA-HU American Society for Engineering Education (ASEE) Summer Faculty Fellowship Program , UNITED STATES

Document Type: Conference Paper
Record Type: Abstract
Language: ENGLISH
Report No: NASA no. 19990019723
File Segment: Aerospace & High Technology

Abstract:
One of the primary goals of **wind** tunnel groups at NASA Langley Research Center is to reduce **wind** tunnel cycle time and cost while improving data quality collected during the tests. The objective of the Advanced Model Instrumentation Technology (AMIT) program is to develop a prototype in- model instrumentation system that can be retrofitted into existing models or integrated in new models at the time of their design. The program has three major components: 1) Micro Electro Mechanical Systems (**MEMS**) **sensors** (shear **stress**, **pressure**, temperature and Angle of attack). 2) In-model electronics (Data acquisition systems and signal conditioning). 3) Data transfer capabilities (Fiber optic or telemetry). **MEMS** sensors are micron- to-millimeter scale devices with moving parts or containing fluids, **fabricated** using **semiconductor** technologies and often directly connected or integrated with **ICs**. **MEMS** Sensor Design **covers** three areas: 1) Layout and process of the sensor itself. 2) Circuitry for interfacing the system with the sensor. 3) The package that will fit the **MEMS** sensor into an application. The purpose of this study is to characterize the mechanical interface of **MEMS** sensors **mounted** on the surface of the model and test the packaging design under simulated conditions (normal stress, vibration, etc ..). The study included two types of **MEMS sensors**, namely **pressure sensors** and shear **stress sensors**. A measurement system was developed for characterizing the **sensors** under normal **strain** and at different temperatures. Each sensor was **mounted** on a specially designed cantilever beam that has a maximum strain of 1000 micro in/in. The output voltage of the **MEMS pressure sensor** was measured as a function of applied static pressure and the strain on the beam (at different temperatures). The resistance of four different resistors on the shear **stress sensor** was measured as a function of the strain on the beam (also at different temperatures). The resistance of four different resistors on the shear **stress sensor** was measured as a function of the strain on the beam (also at different temperatures). Results of the experiment show that change in the output voltage of the **pressure sensor** due to **strain** is less than 80 microvolt and is less than 0.1% of FSO. One can conclude that the strain on the beam has minimal effect on the output of the **pressure sensor**. Resistance values of the shear **stress sensor**' resistors increase with the increase in strain. More measurements need to be done to further characterize the relationship between shear **stress sensor** output and **strain** on the airfoil. Future studies also may include the effect of pressure and temperature on shear **stress sensors.**

5/4/2006 1:55:48 PM
5/4/2006 2:40:02 PM

[File 344] Chinese Patents Abs Jan 1985-2006/Jan
[File 347] JAPIO Nov 1976-2005/Sep(Updated 060103)
[File 350] Derwent WPIX 1963-2006/UD,UM &UP=200607
[File 371] French Patents 1961-2002/BOPI 200209

Set	Items	Description
S1	83773	S MICROFABRICAT?????? OR MICRO()FABRICAT?????? OR (MICROELECTRONIC? ? OR MICRO()ELECTRONIC OR SEMICONDUCTOR? ? OR SEMI()CONDUCTOR? ? OR MEMS)(3N)FABRICAT??????? OR MICROMACHIN?????? OR MICRO()MACHIN?????? OR (SEMICONDUCTOR OR SEMI()CONDUCTOR)(3N)PROCESS???????
S2	190503	S (VACUUM OR PRESSURE OR PIEZO??????????? OR STRAIN????? OR STRESS?????? OR FORCE? ?)(3N)(SENS???? OR DETECT??????? OR GAUGE? ? OR INSTRUMENT????? OR TEST????? OR PROB????)
S3	3753119	S ENCLOS????? OR HOUS??????? OR ENCAS???????? OR COVER?????? OR ENCAPSULAT????? OR MOUNT?????
S4	2590031	S SEMICONDUCTOR? ? OR SEMI()CONDUCTOR? ? OR PCB? ? OR TAB? ? OR PRINT????()CIRCUIT()BOARD? ? OR CIRCUIT???()BOARD? ? OR LOAD()BOARD? ? OR LOADBOARD? ? OR LSI? ? OR ASIC? ? OR ELECTRON???()DEVICE? ? OR PRINT???()CIRCUIT??? OR IC? ? OR INTEGRAT????()CIRCUIT??? OR CHIP? ? OR WAFER??? OR MICROCHIP? ? OR MICRO()CHIP? ? OR VLSI? ? OR FLEX?????(3N)CIRCUIT OR FLEX?????? OR (LEAD? ? OR WIRE? ? OR WIRING OR LINE? ? OR TRAC????? OR INTEGRAT?????)(3N)FLEX?????? OR MEMS OR MICROELECTROMECHANIC???? OR MICRO()ELECTROMECHANIC???? OR MICROMECHANIC????? OR MICRO()MECHANIC???? OR MICRO()OPTICAL
S5	1646014	S SERPENTINE OR SINOUS OR WIND???? OR SNAK??? OR UNDULAT???? OR COIL???? OR HELIX??? OR SPIRAL OR CURV??????
S6	29941	S IC=(G01L-011/00 OR G01L-021/12 OR G01M-003/32 OR H01L-021/50 OR H01L-023/02 OR H05K-005/06)
S7	8247	S MC=(S02-F04D1 OR U11-C18C OR U12-B03F1A OR V06-L02A OR V06-L03)
S8	22	S S1 AND S2 AND S3 AND S4 AND S5
S9	1	S S8 AND S6
S10	7	S S8 AND S7
S11	17	S S8 AND PY<=2004
S12	3490	S S1 AND S4 AND S5
S13	46	S S12 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S14	1	S S13 AND (SUSPEND????? OR HANG?????? OR DROP????? OR FLOAT???)
S15	1	S S13 AND (SEPARATE(2N)(DIE OR DIE OR DICE))
S16	64	S S1 AND S2 AND S5
S17	2	S S16 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S18	1	S S16 AND ((SERPENTINE OR HELIX OR SINOUS)(2N)(WIRE OR WIRING))
S19	1	S S16 AND (SEPARATE(2N)(DIE OR DIE OR DICE))
S20	6	S S16 AND (SUSPEND????? OR HANG?????? OR DROP????? OR FLOAT???)
S21	4	S S20 AND PY<=2004
S22	1762	S S2 AND S4 AND S5
S23	1	S S22 AND ((SERPENTINE OR HELIX OR SINOUS)(2N)(WIRE OR WIRING))
S24	15	S S22 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S25	1	S S24 AND (SUSPEND????? OR HANG?????? OR DROP????? OR FLOAT???)
S26	12	S S24 AND PY<=2004
S27	254	S S1 AND S2 AND S3
S28	1	S S27 AND ((SERPENTINE OR HELIX OR SINOUS)(2N)(WIRE OR WIRING))
S29	17	S S27 AND (SUSPEND????? OR HANG?????? OR DROP????? OR FLOAT???)
S30	0	S S29 AND (WIRE(2N)BOND???? OR FLIP()CHIP OR ELECTRICAL()INTERCONNECT??????)
S31	15	S S29 AND PY<=2004
S32	1	S S14 NOT S9
S33	0	S S18 NOT (S9 OR S14)
S34	0	S S19 NOT (S9 OR S14 OR S18)
S35	0	S S23 NOT (S9 OR S14 OR S18 OR S19)
S36	1	S S25 NOT (S9 OR S14 OR S18 OR S19 OR S23)
S37	0	S S28 NOT (S9 OR S14 OR S18 OR S19 OR S23 OR S25)
S38	1	S S29 AND S6
S39	7	S S29 AND S7
S40	6	S S10 NOT (S9 OR S14 OR S18 OR S19 OR S23 OR S25 OR S28)
S41	1	S S17 NOT (S9 OR S10 OR S14 OR S18 OR S19 OR S23 OR S25 OR S28)
S42	2	S S21 NOT (S9 OR S10 OR S14 OR S17 OR S18 OR S19 OR S23 OR S25 OR S28)

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S43	5	S S39 NOT (S9 OR S10 OR S14 OR S17 OR S18 OR S19 OR S21 OR S23 OR S25 OR S28)
S44	1	S S38 NOT (S9 OR S10 OR S14 OR S17 OR S18 OR S19 OR S21 OR S23 OR S25 OR S28 OR S39)
S45	11	S S26 NOT (S9 OR S10 OR S14 OR S17 OR S18 OR S19 OR S21 OR S23 OR S25 OR S28 OR S38 OR S39)
S46	9	S S31 NOT (S9 OR S10 OR S14 OR S17 OR S18 OR S19 OR S21 OR S23 OR S25 OR S26 OR S28 OR S38 OR S39)

36/9/1 (Item 1 from file: 350) **Links**
Derwent WPIX

013615092 **Image available**
WPI Acc No: 2001-099300/200111
XRAM Acc No: C01-103920
XRPX Acc No: N01-242545

Fabrication of vacuum microstructure by etching epitaxial layer of silicon substrate having silicon on insulator (SOI) structure, encapsulating structures in vacuum, etching to open electrode structures and forming metal electrode

Patent Assignee: KOREA ELECTRONICS & TELECOM RES INST (KOEL-N); ELECTRONICS & TELECOM RES INST (ELTE-N)
Inventor: CHANG W I; CHOI C U; KIM D Y; LEE J H; CHOI C A; JANG W I
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2000018926	A	20000406	KR 9836777	A	19980907	200111	B
US 6225145	B1	20010501	US 99390850	A	19990907	200136	
KR 276429	B	20001215	KR 9836777	A	19980907	200175	

Priority Applications (No Type Date): KR 9836777 A 19980907
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2000018926	A			H01L-029/84	
US 6225145	B1		9	H01L-021/44	
KR 276429	B			H01L-029/84	Previous Publ. patent KR 2000018926

Abstract (Basic): US 6225145 B1

NOVELTY - A vacuum microstructure is fabricated by totally etching an epitaxial layer of a silicon substrate having a silicon on insulator (SOI) structure, encapsulating formed electrode and **floating** vibratory structures with a vacuum sealing substrate, etching the silicon substrate from the back side to open the electrode structures and forming a metal electrode.

DETAILED DESCRIPTION - Fabrication of a vacuum microstructure involves:

(a) totally etching an epitaxial layer of a silicon substrate (13) having an SOI structure comprising an upper silicon epitaxial layer (11), an interlevel insulating layer (12) and a lower silicon bulk layer (17) to form two electrode structures and a **floating** vibratory structure and encapsulating them with a vacuum sealing substrate (16) in a vacuum; and

(b) etching the silicon substrate having the SOI structure from the back side to the interlevel insulating layer to open the electrode structures and forming a metal electrode (19).

USE - Used for fabricating a vacuum microstructure used for elements, e.g. elements of **microelectromechanical** system, operating in vacuum.

ADVANTAGE - Eliminates a process for mounting angular velocity sensors one by one by on the **sensor chip** in a **vacuum** after **wafer** process. The sensor structure uses a flip bonding metal ball to the slanting contact **window** structure in the step of electrical wiring with another **chip** or substrate so improving the performance of the device.

DESCRIPTION OF DRAWING(S) - The figure shows a cross-section of the vacuum microstructure.

Silicon epitaxial layer (11)
Interlevel insulating layer (12)
Silicon substrate (13)
Vacuum sealing substrate (16)
Lower silicon bulk layer (17)
Metal electrode (19)
pp; 9 DwgNo 2M/2

Technology Focus:

TECHNOLOGY FOCUS - ELECTRONICS - Preferred Device: In use, the metal electrode of the fabricated vacuum microstructure is electrically connected to an **integrated circuit chip** or an external substrate for connection with external circuits via a **bonding** metal **wire**. Preferably the metal electrode is electrically connected to an external substrate via a **flip chip** bonding metal ball.

Step (a) includes:

(a1) etching the epitaxial layer by using a first oxide layer at both ends of the epitaxial layer of the SOI structure as a mask and removing the oxide layer to form a vacuum sealing projection;

(a2) forming a second oxide layer on the whole surface of the result of the step (a), defining a pattern of comb-like electrode and vibratory structures by lithography, and etching the lower silicon bulk layer by lithography to align the patterns with an electrode to be formed on the epitaxial layer to form an imprinting pattern;

(a3) vertically etching the epitaxial layer by plasma technology using the second oxide layer as a mask; and

(a4) removing the interlevel insulating layer used as a scarifying layer underlying the vibratory structure to form the **floating** vibratory structure and bonding with the vacuum sealing substrate hermetically.

Step (b) includes:

(b1) depositing a silicon nitride layer underlying the lower silicon bulk layer to open a contact **window** for bonding the electrode structures, and etching the contact **window** region by lithography;

(b2) etching down to the interlevel insulating layer underlying the electrode structures by using the remaining silicon nitride layer as a mask to open the electrode structures;

(b3) depositing a third oxide layer for insulation between the opened electrode structures and the external substrate; and

(b4) etching the third oxide layer by lithography to open the electrode structures again and forming an aluminum metal electrode

Title Terms: FABRICATE; VACUUM; MICROSTRUCTURE; ETCH; EPITAXIAL; LAYER; SILICON; SUBSTRATE; SILICON; INSULATE; SOI; STRUCTURE; ENCAPSULATE; STRUCTURE; VACUUM; ETCH; OPEN; ELECTRODE; STRUCTURE; FORMING; METAL;

40/9/2 (Item 2 from file: 350) **Links**
Derwent WPIX

017187293 **Image available**
WPI Acc No: 2005-510923/200552
XRPX Acc No: N05-416778

Hermetically sealed micro-machined electromechanical device e.g. actuator has internal seal device patterned in silicon layer, joined to internal surface of cover plate in sealing arrangement with pass-through window of plate

Patent Assignee: HONEYWELL INT INC (HONE)
Inventor: COUSSEAU P; ESKRIDGE M H
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20050139967	A1	20050630	US 2003746463	A	20031224	200552	B
US 6949807	B2	20050927	US 2003746463	A	20031224	200563	

Priority Applications (No Type Date): US 2003746463 A 20031224
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050139967	A1		14	H01L-023/552	
US 6949807	B2			H01L-029/84	

Abstract (Basic): US 20050139967 A1

NOVELTY - An internal seal device patterned in silicon layer, is joined to internal surface of a **cover** plate in a sealing arrangement with a pass-through **window** of plate. An internal electrical conductor (120) is arranged between **micro-machined** electromechanical device (100) and seal device. An external electrical conductor is arranged in electrical connection with external surface area of seal device exposed in **window.**

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the method of manufacturing hermetically sealed **micro-machined** electromechanical system device.

USE - E.g. **micro-mechanical** filter, **pressure sensor**, gyroscope, resonator, actuator, rate sensor, vibrating beam acceleration sensor, capacitive acceleration sensor and accelerometer.

ADVANTAGE - Prevents particulate and vapor contaminates from entering the device during the freezing and rinsing away the unnecessary portions of the silicon substrate.

DESCRIPTION OF DRAWING(S) - The figure shows a plan view of the hermetically sealed **MEMS** device.

MEMS device (100)
pillar (102)
inner surface of top **cover** plate (106)
bottom **cover** plate (110)

46/9/4 (Item 4 from file: 350) **Links**
Derwent WPIX

011971352 **Image available**
WPI Acc No: 1998-388262/**199833**
XRPX Acc No: N98-302671

Micro-machining technique for producing component with suspended element - includes use of two layers with one layer etched by selective gas etching process to define suspended finger which is able to vibrate or move w.r.t. component assembly

Patent Assignee: COMMISSARIAT ENERGIE ATOMIQUE (COMS)
Inventor: GRANGE H; MICHEL F; ROBERT P
Number of Countries: 019 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9829720	A1	19980709	WO 97FR2437	A	19971229	199833	B
FR 2757941	A1	19980703	FR 9616198	A	19961230	199833	
EP 950172	A1	19991020	EP 97953960	A	19971229	199948	
			WO 97FR2437	A	19971229		
JP 2001507289	W	20010605	WO 97FR2437	A	19971229	200138	
			JP 98529703	A	19971229		
US 6365056	B1	20020402	WO 97FR2437	A	19971229	200226	
			US 99331255	A	19990727		
EP 950172	B1	20040303	EP 97953960	A	19971229	200417	
			WO 97FR2437	A	19971229		
DE 69727967	E	20040408	DE 627967	A	19971229	200425	
			EP 97953960	A	19971229		
			WO 97FR2437	A	19971229		

Priority Applications (No Type Date): FR 9616198 A 19961230
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9829720	A1	F	15	G01L-009/00	
Designated States (National): JP US					
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
FR 2757941	A1			G01D-005/00	
EP 950172	A1	F		G01L-009/00	Based on patent WO 9829720
Designated States (Regional): DE FR GB IT					
JP 2001507289	W		10	B81C-001/00	Based on patent WO 9829720
US 6365056	B1			H01L-021/302	Based on patent WO 9829720
EP 950172	B1	F		G01L-009/00	Based on patent WO 9829720
Designated States (Regional): DE FR GB IT					
DE 69727967	E			G01L-009/00	Based on patent EP 950172
					Based on patent WO 9829720

Abstract (Basic): WO 9829720 A
The method for producing a **suspended** element (7) by

micro-machining includes use of an etching technique. The assembly includes a substrate (1) successively **covered** with a first blocking layer (2) of first material and second layer (3) of a second material in which the **suspended** element (7) is shaped. The method uses dry etching with a gas whose selectivity enables the etching of the second layer (3) without affecting the blocking layer (2).

The etching is achieved under conditions established for anisotropic etching of the second material, the etching being carried out in a first phase for delimiting the **suspended** element (7) up to the level of the blocking layer (2). A second phase includes release of the **suspended** element (7) by etching the superficial layer of the **suspended** element delimited during the first phase, adjacent to the blocking layer.

USE - Enables production of **suspended** component within **micro-machined** component for use in accelerometer, **pressure sensors** or micro-actuators.

Dwg.2/2

Title Terms: MICRO; MACHINING; TECHNIQUE; PRODUCE; COMPONENT; SUSPENSION; ELEMENT; TWO; LAYER; ONE; LAYER; ETCH; SELECT; GAS; ETCH; PROCESS; DEFINE ; SUSPENSION; FINGER; ABLE; VIBRATION; MOVE; COMPONENT; ASSEMBLE
Derwent Class: Q68; S02; U12
International Patent Class (Main): B81C-001/00; G01D-005/00; G01L-009/00; H01L-021/302
International Patent Class (Additional): G01L-007/00; G01P-009/00; G01P-015/00; G01P-015/02; H01L-029/84
File Segment: EPI; EngPI
Manual Codes (EPI/S-X): S02-F04B3; S02-G03; U12-B03E